Supreme Court, U.S.
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NO.

IN THE

Supreme Court of the United States

LEGAL ENVIRONMENTAL ASSISTANCE FOUNDATION, INC.,
PETITIONER,

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
RESPONDENT,

and

STATE OIL AND GAS BOARD OF ALABAMA,
INTERVENOR.

ON PETITION FOR WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE ELEVENTH CIRCUIT

PETITION FOR A WRIT OF CERTIORARI

DAVID A. LUDDER
Counsel of Record
LEGAL ENVIRONMENTAL ASSISTANCE FOUNDATION, INC.
1114 Thomasville Road, Suite E
Tallahassee, Florida 32303
(850) 681-2591

50 pgs

QUESTION PRESENTED

Whether the United States Court of Appeals erred in affirming the U.S. Environmental Protection Agency approval of Alabama's revised underground injection control program pursuant to 42 U.S.C. § 300h-4 where such program does not provide that coalbed methane well operators must satisfy the State that their proposed injection of hydraulic fracturing fluids will not result in the presence of any contaminant in underground sources of drinking water which may adversely affect the health of persons. *See* 42 U.S.C. §§ 300h(b)(1)(B)(i), 300h(d)(2).

CORPORATE DISCLOSURE STATEMENT

LEAF is a non-profit corporation. It has no parent corporation and no stock.

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ON PETITION FOR WRIT OF CERTIORARI
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PETITION FOR A WRIT OF CERTIORARI

The Legal Environmental Assistance Foundation, Inc. respectfully petitions for a writ of certiorari to review the judgment of the United States Court of Appeals for the Eleventh Circuit in this case.

OPINIONS BELOW

The opinion of the court of appeals (App., *infra*, 1a-23a) is reported at 276 F.3d 1253 (11th Cir. 2001). The order denying rehearing and rehearing en banc (App.,

infra, 24a-25a) is reported at – F.3d – (Table, No. 00-10381-DD) (per curiam).

JURISDICTION

The judgment of the court of appeals was entered on December 21, 2001. A petition for rehearing was denied on March 18, 2002. App., *infra*, 24a-25a. The jurisdiction of this Court is invoked under 28 U.S.C. § 1254(1).

STATUTORY PROVISIONS INVOLVED

The pertinent provisions of the Safe Drinking Water Act (42 U.S.C. §§ 300h and 300h-4) are reprinted in an appendix to this petition. App., *infra*, 26a-32a.

STATEMENT OF THE CASE

Hydraulic fracturing is a technique used by the oil and gas industry for enhancing the recovery of natural gas from underground formations. In Alabama, it is commonly used in connection with the extraction of natural methane gas from coal beds. Coal beds, as all underground formations, are formed of porous, sometimes fractured, materials. These coal beds contain natural gas, which can be extracted through production wells. Because of the tightness of coal bed formations and their very low permeability, the rate of production of natural gas is low in the absence of production enhancement.

Experience has shown that coal beds must be hydraulically fractured to induce or stimulate a significant flow of gas. "Hydraulic fracturing" involves the injection of fluids and a propping agent (usually sand) into a coal bed. The application of pressure injects

> fluids into the coal bed thereby widening natural fractures and inducing new ones that are held open by the propping agent after the pressure is released. As a result, these fractures provide paths for gas to migrate to the wellbore, thus stimulating gas flow. It has been demonstrated that the gas flow rate from a coal bed may be increased as much as twenty-fold by hydraulic fracturing.

Legal Envtl. Assistance Found., Inc. v. United States Envtl. Protection Agency, 118 F.3d 1467, 1470 (11th Cir. 1997) [hereinafter, "*LEAF I*"] (citations omitted).

> Several thousand coal bed methane gas production wells have been constructed in Alabama since 1980. Due to the large number of these wells, EPA has recognized that "there is a growing potential for contamination of drinking water aquifers," resulting primarily from the hydraulic fracturing necessary to stimulate production.

Id. at 1471.[1]

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[1] A 1998 survey found that there are 10,373 coalbed methane wells in 13 states. Survey Results on Inventory and Extent of Hydraulic Fracturing in Coalbed Methane Wells in the Producing States, Ground Water Protection Council (Dec. 15, 1998) attached to State Oil and Gas Board of Alabama Comments (Nov. 22, 1999). Since this survey, the number of coalbed methane wells projected to become operational during the next ten years has increased tremendously. *See e.g.*, Bureau of Land Management, Notice of Availability of Draft Environmental Impact Statement, 67 Fed. Reg. 6943 (2002) (10,000 wells in the Montana portion of the Powder River Basin); Bureau of Land Management, Notice of Availability of Draft Environmental Impact Statement, 67 Fed. Reg. 1497, 1498 (2002) (51,000 wells in the

"In Alabama, hydraulic fracturing of coal beds generally occurs by injecting fluids directly into underground sources of drinking water." 65 Fed. Reg. 2889, 2891 (2000) (final approval of Alabama's Class II UIC program revision). The chemical constituents of hydraulic fracturing fluids include as many as 40 chemicals (*e.g.*, propargyl alcohol, formaldehyde, ethylene glycol, fumaric acid, acetic acid, acetone, sulfuric acid, and sodium hydroxide), only four of which are subject to national primary drinking water regulations (40 C.F.R. Part 141). *E.g.*, Selected Hydraulic Fracturing Fluid Constituents, Drinking Water Standards, and Available Health Effects Data, LEAF Comments (Nov. 26, 1999) Exhibit BBB; Halliburton Services, Comparison of Three Halliburton Coalbed Methane Stimulation Treatments to U.S. EPA National Primary and Secondary Drinking Water Regulations (1999), LEAF Comments (Nov. 26, 1999) Exhibit Y. *See LEAF I*, 118 F.3d at 1471 ("The fluids used in hydraulic fracturing may contain guar gel, nitrogen or carbon dioxide gases, gelled oil, diesel oil, sodium hydroxide, hydrochloric acid, sulfuric acid, fumeric acid, as well as other additives.).

Part C of the Safe Drinking Water Act (SDWA) establishes a regulatory program for the protection of underground sources of drinking water. *See* 42 U.S.C. §§ 300h to 300h-8. This program requires EPA to promulgate regulations that set forth minimum requirements for state Underground Injection Control (UIC) programs. 42 U.S.C. § 300h.[2] A state must submit

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Wyoming portion of the Powder River Basin).

[2] The minimum requirements are identified in 40 C.F.R. Part 145, Subparts B and C.

to EPA a proposed UIC program that meets these minimum requirements, and receive EPA approval thereof, in order to obtain primary regulatory and enforcement responsibility for underground injection activities within that state. 42 U.S.C. § 300h-1. Alternatively, if a state UIC program relates to certain specified oil or natural gas activities, the state may submit a program that meets the requirements of 42 U.S.C. § 300h(b)(1)(A)-(D) and "represents an effective program . . . to prevent underground injection which endangers underground drinking water sources." 42 U.S.C. § 300h-4(a).[3] The state retains primary responsibility until EPA determines, by rule, that the state UIC program no longer meets the minimum requirements established under 42 U.S.C. § 300h. 42 U.S.C. § 300h-1(b)(3).[4] *See LEAF I*, 118 F.3d at 1469-70. *See also Legal Envtl. Assistance Found., Inc. v. Board of County Comm'rs of Brevard County, Florida*, 10 F.3d 1579, 1580 (11th Cir. 1994) (per curiam). If EPA promulgates a rule disapproving a state UIC program, EPA must promulgate a federal UIC program for the state within 90 days. 42 U.S.C. § 300h-1(c).

To prevent endangerment to underground sources of drinking water, state UIC programs are normally required to prohibit the injection of fluids through Class II wells directly into underground sources of drinking

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[3] EPA has published Guidance for State Submissions under 42 U.S.C. § 300h-4(a), appearing at LEAF Comments (Nov. 26, 1999) Exhibit Q, *reprinted in* 46 Fed. Reg. 27333 (1981), to assist states in preparing UIC program submissions under 42 U.S.C. § 300h-4(a).

[4] *See also* 40 C.F.R. § 145.34(b).

water. 40 C.F.R. § 146.22(a).[5] However, a state UIC program developed and submitted to EPA under 42 U.S.C. § 300h-4 is authorized to be somewhat more flexible,[6] but must nevertheless meet the requirements of subparagraphs (A) through (D) of 42 U.S.C. § 300h(b)(1).

Alabama's UIC program for Class II wells[7] was initially approved by EPA in 1982. 47 Fed. Reg. 33268 (1982); 40 C.F.R. §147.50. In 1994, LEAF petitioned EPA to initiate proceedings to withdraw approval of the program because it failed to regulate the underground injection of hydraulic fracturing fluids to enhance the recovery of methane gas from coal beds. EPA denied

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[5] 40 C.F.R. § 146.22(a) provides that "[a]ll new Class II wells shall be sited in such a fashion that they inject into a formation which is separated from any underground source of drinking water by a confining zone that is free of known open faults or fractures within the area of review."

[6] The Court of Appeals said:

> The SDWA provides two statutory methods for approval of a state's UIC program. See SDWA § 1422(b) (codified at 42 U.S.C. § 300h-1(b)); SDWA § 1425 (codified at 42 U.S.C. § 300h-4(a)). Approval under § 1422(b) requires a state to show that its UIC program satisfies applicable federal regulations promulgated by EPA under 42 U.S.C. § 300h and set forth in 40 C.F.R. Part 145. Approval under § 1425 requires a state to demonstrate that its UIC program meets the requirements of SDWA §§ 1421(b)(1)(A)-(D), and represents an effective program to prevent underground injection which endangers drinking water sources.

Legal Envtl. Assistance Found., Inc. v. United States Envtl. Protection Agency, 276 F.3d 1253, 1256-57 (11th Cir. 2001) [hereinafter, *"LEAF III"*].

[7] A Class II well includes any well which injects fluids for the enhanced recovery of natural gas. 40 C.F.R. § 144.6(b).

LEAF's petition and LEAF sought review in the Court of Appeals. The Court granted LEAF's petition, held that the injection of hydraulic fracturing fluids to enhance the recovery of methane gas from coal beds is "underground injection" and is required to be regulated by the SDWA, and remanded the matter to EPA for further proceedings. *LEAF I.*

Subsequently, LEAF sought and the Court of Appeals issued a writ of mandamus to enforce the Court's mandate. *In re Legal Envtl. Assistance Found., Inc.*, No. 98-06929 (11th Cir. Feb. 18, 1999) (unpublished) [hereinafter, "*LEAF II*"]. EPA then initiated proceedings to withdraw approval of Alabama's Class II UIC program. *See* 64 Fed. Reg. 27744 (1999) (proposed rule). Thereafter, Alabama submitted a revised UIC program to EPA. *See* 64 Fed. Reg. 56987 (1999).

The revised UIC program for Class II wells which Alabama submitted to EPA for approval under 42 U.S.C. § 300h-4 provides that coalbed methane Class II well operators shall certify either that their proposed fracturing operations will not occur in an underground source of drinking water or that the mixture of fluids to be used to hydraulically fracture the coal beds does not exceed the primary drinking water regulations. Ala. Admin. Code R. 400-4-5-.04(3) [now R. 400-3-8-.03(3)]. The revised Alabama UIC program does *not* require that operators who propose to inject hydraulic fracturing fluids directly into underground sources of drinking water satisfy the State that the underground injection will not endanger drinking water sources, *i.e.*, demonstrate that the injected fluids will not "otherwise adversely affect the health of persons."

EPA proposed to approve Alabama's revised UIC program, 64 Fed. Reg. 56986 (1999), and conducted a public hearing and received written comments thereon. Despite that the 40 chemical constituents of hydraulic fracturing fluids will be injected directly into underground sources of drinking water, that most of these chemicals are not subject to national primary drinking water regulations, and that well operators are not required to satisfy the State that the fluids will not "otherwise adversely affect the health of persons," on January 19, 2000, EPA approved Alabama's revised UIC program. 65 Fed. Reg. 2889 (2000).

On January 25, 2000, LEAF filed a petition for review of EPA's decision to approve Alabama's revised UIC program in the United States Court of Appeals for the Eleventh Circuit on the grounds that the decision was not in accordance with the law (*i.e.*, the SDWA and EPA regulations) and was arbitrary and capricious. The Court of Appeals had jurisdiction to review EPA's rule pursuant to 42 U.S.C. § 300j-7(a)(2). *See LEAF I*, 118 F.3d at 1472. A panel of the Court issued a decision and opinion on December 21, 2001. The panel held (1) that EPA's decision to subject Alabama's UIC program for hydraulic fracturing to 42 U.S.C. § 300h-4(a) approval is based on a permissible construction of the statute; (2) that EPA's decision to classify hydraulic fracturing of coal beds to produce methane as a "Class II-like underground injection activity" rather than a Class II well is inconsistent with the plain language of 40 C.F.R. § 144.6; and (3) that EPA's determination that Alabama's UIC program meets the requirements of 42 U.S.C. § 300h(b)(1)(A)-(D) and "represents an effective program (including adequate recordkeeping and reporting) to prevent underground injection which endangers drinking water sources," 42 U.S.C. § 300h-4(a), is not

arbitrary or capricious. *LEAF III*. LEAF timely filed a petition for rehearing and rehearing en banc on the third holding of the panel decision. The petition was denied on March 18, 2002.

REASONS FOR GRANTING THE PETITION

The United States Court of Appeals erred in affirming the U.S. Environmental Protection Agency approval of Alabama's revised underground injection control program pursuant to 42 U.S.C. § 300h-4 where such program does not provide that coalbed methane well operators must satisfy the State that their proposed injection of hydraulic fracturing fluids will not result in the presence of any contaminant in underground sources of drinking water which may adversely affect the health of persons. *See* 42 U.S.C. §§ 300h(b)(1)(B)(i), 300h(d)(2).

Agency action is arbitrary under 5 U.S.C. § 706(2)(a) if it fails to consider the relevant factors or an important aspect of the problem. *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983); *Bowman Transp., Inc. v. Arkansas-Best Freight System, Inc.*, 419 U.S. 281, 285 (1974); *Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402, 416 (1971). In the instant case, EPA failed to require that coalbed methane well operators who propose to inject hydraulic fracturing fluids directly into underground sources of drinking water satisfy the State that their proposed injection will not result in the presence of any contaminant in underground water which may adversely affect the health of persons. This failure directly contravenes the mandate of 42 U.S.C. §§ 300h(b)(1)(B)(i) and 300h(d)(2).

42 U.S.C. § 300h(b)(1) provides:

> Regulations under subsection (a) of this section for State underground injection programs shall contain minimum requirements for effective programs to prevent underground injection which endangers drinking water sources within the meaning of subsection (d)(2) of this section. Such regulations shall require that a State program, in order to be approved under section 300h-1 of this title -
>
> . . .
>
> (B) shall require (i) in the case of a program which provides for authorization of underground injection by permit, that *the applicant for the permit to inject must satisfy the State that the underground injection will not endanger drinking water sources*, ...

(Emphasis added). This subsection was discussed in the Report of the House Interstate and Foreign Commerce Committee:

> The Administrator's guidelines for State underground injection control programs must, as a minimum, require States to . . . require applicants for underground injection permits to bear the burden of proving to the State that its injection will not endanger drinking water sources; . . ..

H.R. Rep. No. 93-1185, 93rd Cong., 2nd Sess. 28 (1974), *reprinted in* 1974 U.S. Code Cong. & Admin. News 6454, 6481.

42 U.S.C. § 300h(d)(2) provides:

> Underground injection endangers drinking water sources if such injection may result in the presence in underground water which supplies or can reasonably be expected to supply any public water system of any contaminant, and if the presence of such contaminant may result in such system's not complying with any national primary drinking water regulation or *may otherwise adversely affect the health of persons.*

(Emphasis added). This subsection was also discussed in the Report of the House Interstate and Foreign Commerce Committee:

> [T]he protection is to apply to any injected substance (or derivative thereof) whether or not that substance is a contaminant subject to national primary drinking water regulations. Thus the injections [sic] is to be subject to regulation or prohibition if the injected substance may cause or contribute to noncompliance with a National primary drinking water regulation or if it may otherwise adversely affect the public health, including causing or contributing to the water's unfitness for human consumption.

H.R. Rep. No. 93-1185, 93rd Cong., 2nd Sess. 28-29 (1974), *reprinted in* 1974 U.S. Code Cong. & Admin. News 6454, 6481.[8]

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[8] The statutory definition of "endangerment" is not limited to contamination which exceeds the Maximum Contaminant Levels for drinking water in 40 C.F.R. Part 141. The House Committee on Interstate and Foreign Commerce discussed the need to consider more than Maximum Contaminant Levels during consideration of the

42 U.S.C. § 300h(b)(1)(B)(i) applies to UIC programs developed pursuant to the alternative demonstration provisions of 42 U.S.C. § 300h-4(a). Thus, even a state UIC program developed under 42 U.S.C. § 300h-4 must require that an applicant for a permit to inject satisfy the State that the proposed injection will not endanger drinking water sources as described in 42 U.S.C. § 300h(d)(2), *i.e.*, that the injection will not result in the presence of any contaminant in underground water which supplies or can reasonably be expected to supply any public water system, if the presence of such contaminant may result in such system's not complying with any national primary drinking water regulation or *may otherwise adversely affect the health of persons.*

Despite that the 40 chemical constituents of hydraulic fracturing fluids will be injected directly into underground sources of drinking water, that most of these chemicals are not subject to national primary drinking water regulations, and that well operators are

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bill which became law:

> The Committee was concerned that its definition of 'endangering drinking water sources' also be construed liberally. Injection which causes or increases contamination of such sources may fall within this definition even if the amount of contaminant which may enter the water source would not by itself cause the maximum allowable levels to be exceeded. The definition would be met if injected material were not completely contained within the well, if it may enter either a present or potential drinking water source, and if it (or some form into which it might be converted) may pose a threat to human health or render the water source unfit for human consumption.

H. Rep. No. 93-1185, 93rd Cong., 2d Sess. 32, *reprinted in* 1974 U.S. Code Cong. & Admin. News 6454, 6484.

not required to satisfy the State that these chemicals will not "otherwise adversely affect the health of persons," EPA approved Alabama's revised UIC program. 65 Fed. Reg. 2889 (2000).

EPA explained its consideration of 42 U.S.C. § 300h(b)(1)(B)(i) as follows:

> Section 1421(b)(1)(B)(i) [42 U.S.C. § 300h(b)(1)(B)(i)] is satisfied because, while the Alabama regulation does not establish a permit requirement, Rule 400-4-5-.04(4) [now R. 400-3-8-.03(5)] states: "Coal beds shall not be hydraulically fractured until the written approval of the Supervisor is obtained."

65 Fed. Reg. at 2894.[9] However, nothing in Ala. Admin. Code R. 400-4-5-.04(4) [now R. 400-3-8-.03(5)], indeed, nothing in R. 400-3-8-.03, requires that well operators bear the burden of proving to the satisfaction of the State that the proposed injection of hydraulic fracturing fluids will not "otherwise adversely affect the health of persons" prior to being granted approval to inject.

EPA identified the well operator's demonstration burden as follows:

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[9] *See also* Summary of Public Comments and Environmental Protection Agency Responses to the Proposed Withdrawal of Alabama's Class II UIC Program and Subsequent Approval of Alabama's Revised UIC Program (Dec. 21, 1999) at 42 ("Alabama's hydraulic fracturing program is structured to assure that USDWs are not endangered where the injectate enters the aquifer directly because such injectate may not exceed MCLs.").

> The State has also adopted additional regulatory provisions preventing underground injection which endangers drinking water sources. State Rule 400-4-5-.04(3) [now R. 400-3-8-.03(3)] states: "The operator shall certify in writing to the Supervisor that the proposed fracturing operation will not occur in a USDW. Evidence that supports how the determination was made shall accompany such certification and be acceptable to the Supervisor. Otherwise, the operator shall certify in writing to the Supervisor that the mixture of fluids to be used to hydraulically fracture the coal beds does not exceed the maximum contaminant levels contained in 40 CFR § 141 Subparts B and G." This provision requires a certification that fracturing fluids will not be injected into a USDW or establishes specifications for the quality of the injectate should the injection occur into the USDW. Specifically, it states that the injectate must meet drinking water standards. Therefore, EPA concludes that adequate provisions have been established to prevent endangerment of drinking water sources from hydraulic fracturing operations.

65 Fed. Reg. at 2894-95.

Here, EPA's failure to consider a relevant factor is demonstrated beyond question. Well operators who inject directly into an underground source of drinking water are only required to satisfy the state that the fluids proposed to be injected will not exceed national primary drinking water regulations. Most of the 40 chemical constituents in hydraulic fracturing fluids will not exceed those regulations because the chemicals are not

addressed by the regulations.[10] Well operators are not required to satisfy the state that the fluids proposed to be injected will not "otherwise adversely affect the health of persons."

EPA recently proposed a UIC rule for Florida which recognized the merit of the issue LEAF raises here. There, EPA was faced with the same concern - that constituents of the fluids to be injected may not be subject to the national primary drinking water regulations but nevertheless may otherwise adversely affect the health of persons. EPA proposed to require that

> [Applicants] shall also provide a non-endangerment demonstration that the injected fluids will not cause any USDWs to exceed primary drinking water regulations in Part 141 of this chapter *and other health based standards (e.g., Federal and State health advisories).*

65 Fed. Reg. 42233, 42244 (2000) (proposed rule) (emphasis added). While "other health based standards (e.g., Federal and State health advisories)" may not encompass the universe of problematic constituents of injected fluids in every case, it is nevertheless a recognition by EPA that a demonstration of compliance with primary drinking water regulations alone is not a

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[10] Because most of 40 chemical constituents of hydraulic fracturing fluids are not subject to national primary drinking water regulations, the certification required by Ala. Admin. Code R. 400-4-5-.04(3) [now R. 400-3-8-.03(3)] is virtually meaningless. A well operator can truthfully certify that the injection fluid does not exceed drinking water standards when the fluid contains ethylene glycol, fumaric acid, acetic acid, acetone, sulfuric acid, and sodium hydroxide.

sufficient demonstration to meet the requirements of 42 U.S.C. §§ 300h(b)(1)(B)(i) and 300h(d)(2).

A well operator's certification that fluids proposed to be injected directly into an underground source of drinking water will not exceed national primary drinking water regulations addresses only half of the non-endangerment demonstration required by the SDWA. *See* 42 U.S.C. §§ 300h(b)(1)(B)(i), 300h(d)(2). The other half - not addressed by the Alabama UIC program approved by EPA - is a demonstration by the applicant that the fluids proposed to be injected will not otherwise adversely affect the health of persons. EPA's approval of Alabama's revised UIC program was arbitrary and capricious because EPA failed to require that coalbed methane well operators satisfy the State that their proposed injection of hydraulic fracturing fluids will not result in the presence of any contaminant in underground sources of drinking water which *may adversely affect the health of persons.*

CONCLUSION

The Court of Civil Appeals erred in affirming EPA's approval of Alabama's revised Class II UIC program. EPA's approval is arbitrary because EPA failed to require that coalbed methane well operators satisfy the State that their proposed injection of hydraulic fracturing fluids will not result in the presence of any contaminant in underground sources of drinking water which *may adversely affect the health of persons* as required by 42

U.S.C. § 300h(b)(1)(B)(i). Accordingly, the petition for writ of certiorari should be granted.

Respectfully submitted,

DAVID A. LUDDER
Counsel of Record
LEGAL ENVIRONMENTAL
ASSISTANCE FOUNDATION, INC.
1114 Thomasville Road, Suite E
Tallahassee, Florida 32303
(850) 681-2591

APPENDIX A

IN THE UNITED STATES COURT OF APPEALS

FOR THE ELEVENTH CIRCUIT

FILED
U.S. COURT OF APPEALS
ELEVENTH CIRCUIT
DECEMBER 21, 2001
THOMAS K. KAHN
CLERK

No. 00-10381

EPA No. 65-02889-FED.REG.

LEGAL ENVIRONMENTAL ASSISTANCE FOUNDATION, INC.,

Petitioner,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

Petition for Review of a Final Order of the Environmental Protection Agency

(December 21, 2001)

Before BLACK and MARCUS, Circuit Judges, and HANCOCK*, District Judge.

* Honorable James H. Hancock, U.S. District Judge for the Northern District of Alabama, sitting by designation.

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BLACK, Circuit Judge:

Petitioner, the Legal Environmental Assistance Foundation (LEAF), seeks review of the United States Environmental Protection Agency's (EPA's) approval of Alabama's revised underground injection control (UIC) program for the underground injection of hydraulic fracturing fluids to enhance the recovery of methane gas from coal beds. For the reasons discussed below, we deny in part and grant in part the petition and remand for further proceedings.

I. BACKGROUND

A. Regulation of Underground Injection under the Safe Drinking Water Act

Part C of the Safe Drinking Water Act (SDWA) is designed to protect underground drinking water sources from contamination caused by underground injection of fluids. *See* 42 U.S.C. §§ 300h to 300h-8. This program requires EPA to promulgate regulations that set forth minimum requirements for state UIC programs. *See id.* § 300h. A state must submit to EPA a proposed UIC program that satisfies these minimum requirements, and must meet EPA approval in order to obtain primary regulatory and enforcement responsibility for underground injection activities within that state. *See id.* § 300h-1. The state retains primary responsibility until EPA determines, by rule, that the state UIC program no longer meets the minimum requirements established under the SDWA. *See id.* § 300h-1(b)(3).

B. Procedural History of Alabama's UIC Program

Alabama's UIC program for Class II wells[1] was initially approved by EPA in 1982.[2] *See* 47 Fed. Reg. 33268 (1982); 40 C.F.R. § 147.50. The UIC program approved in 1982 did not regulate hydraulic fracturing associated with methane production.[3] In 1994, LEAF

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[1] EPA's regulations implementing Part C of the SDWA require that states classify injection wells into one of five categories. Class II wells are defined as:

> Wells which inject fluids: (1) Which are brought to the surface in connection with natural gas storage operations, or conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection; (2) For enhanced recovery of oil or natural gas; and (3) For storage of hydrocarbons which are liquid at standard temperature and pressure.

40 C.F.R. § 144.6(b).

[2] The Alabama UIC program was approved by EPA in two parts. On August 2, 1982, EPA approved Alabama's UIC program for Class II wells, to be administered by the State Oil and Gas Board of Alabama. *See* 40 C.F.R. § 147.50. On August 23, 1983, EPA approved Alabama's UIC program for Class I, III, IV, and V wells to be administered by the Alabama Department of Environmental Management. *See id.* § 147.51. The effective date of this program was August 25, 1983.

[3] Hydraulic fracturing is a technique to enhance the recovery of methane gas from coal beds. *See Legal Envtl. Assist. Found., Inc. v. United States Envt'l Protection Agency*, 118 F.3d 1467, 1470 (11th Cir. 1997) (*LEAF I*). In Alabama, hydraulic fracturing is commonly used in connection with the extraction of natural gas from coal beds. *See id.* EPA defines hydraulic fracturing as a "temporary and intermittent process in which fluids are injected underground at high pressures to create fractures in the coals seam that enhance the

petitioned EPA to withdraw approval of the Alabama UIC program. *See Legal Envt'l Assist. Found., Inc. v. United States Envt'l Protection Agency*, 118 F.3d 1467, 1471 (11th Cir. 1997) (*LEAF I*). LEAF alleged that the Alabama program was deficient because it did not regulate hydraulic fracturing activities associated with methane gas production as required under Part C of the SDWA. *See id.* EPA denied LEAF's petition because it determined that hydraulic fracturing did not fall within the regulatory definition of "underground injection." *See id.* EPA decided that methane gas production wells, which are also used for hydraulic fracturing, need not be regulated under UIC programs because the principal function of these wells is methane gas production and not the underground emplacement of fluids. *See id.* LEAF subsequently petitioned this Court for review, contending that EPA's interpretation of the regulations rendered the regulations inconsistent with the statute. *See id.* at 1472. We concluded that hydraulic fracturing activities constitute underground injection under Part C of the SDWA. *See id.* at 1478. Since EPA's contrary interpretation could not be squared with the plain language of the statute, we granted LEAF's petition for review and remanded for further proceedings. *See id.*

Thereafter, LEAF sought, and this Court issued, a writ of mandamus to enforce the Court's mandate in *LEAF I*. *See In re Legal Envtl. Assist. Found., Inc.*, No. 98-06929 (11th Cir. Feb. 18, 1999) (unpublished). EPA subsequently initiated proceedings to withdraw approval of Alabama's Class II UIC program. *See* 64 Fed. Reg. 27744 (1999) (proposed rule). Before the withdrawal

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recovery of methane gas by creating pathways for the gas to flow to the surface." 65 Fed. Reg. 2889, 2892 (2000).

proceedings were completed, however, Alabama submitted a revised UIC program to the EPA, *see* 64 Fed. Reg. 56986 (1999) (proposed rule), seeking approval of its revised UIC program under the alternative demonstration provision in § 1425 of the SDWA, 42 U.S.C. § 300h-4(a). EPA proposed to approve Alabama's revised UIC program, *see* 64 Fed. Reg. 56986 (1999), and conducted a public hearing and received written comments thereon. LEAF objected, arguing that approval under § 300h-4(a) was improper because hydraulic fracturing did not fall within the scope of activities identified in § 1425, and approval under that section was therefore improper. *See* LEAF Comments (Nov. 26, 1999) at 3-8. EPA rejected LEAF's argument, and, on January 19, 2000, promulgated a final rule approving Alabama's revised UIC program under § 1425. *See* 65 Fed. Reg. 2889 (2000). Thereafter, LEAF timely filed this petition for review.

In this appeal, LEAF argues that EPA's approval of Alabama's UIC program should be set aside for three reasons. First, LEAF argues that the underground injection of hydraulic fracturing fluids to enhance the recovery of methane gas from coal beds is not "underground injection for the secondary or tertiary recovery of . . . natural gas" under § 1425 and, therefore, EPA's approval of Alabama's revised UIC program under that section is not "in accordance with the law." Second, LEAF contends that wells used for the injection of hydraulic fracturing fluids to enhance the recovery of methane gas from coal beds are "Class II wells" as defined in 40 C.F.R. § 144.6(b). According to LEAF, it follows that EPA's approval of Alabama's revised UIC program, which regulates such hydraulic fracturing as a "Class II-like underground injection activity" is "not in accordance with law." Third, LEAF argues that even if

Alabama's revised UIC program is covered by the alternative approval procedure pursuant to § 1425, EPA's approval of the revised program is arbitrary and capricious. We address each argument in turn.

II. DISCUSSION

A. EPA's Approval of Alabama's UIC Program under Section 1425

1. Statutory Framework

The SDWA provides two statutory methods for approval of a state's UIC program. *See* SDWA § 1422(b) (codified at 42 U.S.C. § 300h-1(b)); SDWA § 1425 (codified at 42 U.S.C. § 300h-4(a)). Approval under § 1422(b) requires a state to show that its UIC program satisfies applicable federal regulations promulgated by EPA under 42 U.S.C. § 300h and set forth in 40 C.F.R. Part 145. Approval under § 1425 requires a state to demonstrate that its UIC program meets the requirements of SDWA §§ 1421(b)(1)(A)-(D), and represents an effective program to prevent underground injection which endangers drinking water sources. Significantly, the practical difference between the two statutory methods for approval is that the requirements for those programs covered under § 1425 are more flexible than the requirements for those programs covered under § 1422(b). Section 1425, however, only applies to specific types of UIC programs.

Section 1425 provides:

> For purposes of the Administrator's approval or disapproval under section 300h-1 of this title of

> that portion of any State underground injection control program which relates to—
>
> > (1) the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production or natural gas storage operations, or
> >
> > (2) any underground injection for the secondary or tertiary recovery of oil or natural gas,
>
> in lieu of the showing required under subparagraph (A) of section 300h-1(b)(1) of this title the State may demonstrate that such portion of the State program meets the requirements of subparagraphs (A) through (D) of section 300h(b)(1) of this title and represents an effective program (including adequate recordkeeping and reporting) to prevent underground injection which endangers drinking water sources.

SDWA § 1425 (codified at 42 U.S.C. § 300h-4(a)).

In approving Alabama's revised UIC program regulating the hydraulic fracturing of coal beds under this section, EPA recognized that the language of § 1425 does not specifically mention hydraulic fracturing. *See* 65 Fed. Reg. at 2892. EPA perceived the absence of hydraulic fracturing from § 1425 as a gap in the statutory scheme. *See id.* Seeking to fill this perceived gap in the statute, EPA construed § 1425 as applying not only to specific processes used during secondary or tertiary recovery of natural gas, but also generally to techniques and processes – such as hydraulic fracturing – broadly

related to secondary or tertiary recovery. *See id.* On this basis, EPA concluded that the process of hydraulic fracturing, while not technically identical to secondary or tertiary recovery of natural gas, is an "analogous" process, and therefore covered by the alternate approval method set forth in § 1425. *See id.* at 2892-93.

2. Standard of Review

LEAF challenges EPA's construction of § 1425 as contrary to the statute's plain meaning and therefore not in accordance with the law. The standard against which we evaluate LEAF's argument is set forth in *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837, 842-45, 104 S. Ct. 2778, 2781-83 (1984). The *Chevron* test has two steps. "First, always, is the question whether Congress has directly spoken to the precise question at issue. If the intent of Congress is clear, that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress." *Id.* at 842-43, 104 S. Ct. at 2781. "If, however, the court determines Congress has not directly addressed precise question at issue," the court proceeds to step two. *Id.* at 843, 104 S. Ct. at 2781-82. There, "the question for the court is whether the agency's answer is based on a permissible construction of the statute." *Id.*, 104 S. Ct. at 2782. If the agency's interpretation is reasonable, a reviewing court may not substitute its own construction of the statutory provision for that of the agency. *See id.* at 844, 104 S. Ct. at 2782. An agency's reasonable statutory interpretation must therefore stand even in the face of other permissible interpretations, including that which the court may have chosen had the question initially arisen in a judicial proceeding. *See id.* at 843 n.11, 104 S. Ct. at 2782 n.11. Deference is not owed to an agency interpretation, however, if it construes a

statute in a way that is contrary to clear congressional intent. *See id.* at 843 n.9, 104 S. Ct. 2781 n.9.

3. *Chevron* Analysis

a. *Chevron* Step One

In this case, the question at issue is whether a state's program for underground injection of hydraulic fracturing fluids to enhance the recovery of methane gas from coal beds may be approved under the alternative demonstration provisions of § 1425. In determining whether Congress has spoken directly to this issue, we "look to the particular statutory language at issue, as well as the language and design of the statute as a whole." *K Mart Corp. v. Cartier, Inc.*, 486 U.S. 281, 291, 108 S. Ct. 1811, 1818 (1988). Our inquiry begins, as always, with the text of the statute. *See FMC Corp. v. Holliday*, 498 U.S. 52, 57, 111 S. Ct. 403, 407 (1990) ("We begin with the language employed by Congress and the assumption that the ordinary meaning of that language accurately expresses the legislative purpose.") (quoting *Park 'N Fly, Inc. v. Dollar Park & Fly, Inc.*, 469 U.S. 189, 194, 105 S. Ct. 658, 661 (1985)) (internal quotation marks omitted). Additionally, it is an elementary principle of statutory construction that, in construing a statute, we must give meaning to all the words in the statute. *See Bailey v. United States*, 516 U.S. 137, 146, 116 S. Ct. 501, 507 (1995) (noting that each word in a statute is intended to have "particular, nonsuperfluous meaning").

The key words in § 1425 to which we must give meaning are "relates to." These two words are central to this case because § 1425 applies not simply to "any underground injection for the secondary or tertiary recovery of oil or natural gas," but rather to "that portion

of any State underground injection control program which *relates to* . . . any underground injection for the secondary or tertiary recovery of oil or natural gas . . . ." 42 U.S.C. § 300h-4(a) (emphasis added). The parties set forth different interpretations of § 1425. While the difference between the two constructions is subtle, the effect is significant. Not surprisingly, the difference between the two interpretations of § 1425 turns largely on the meaning given to the phrase "relates to." EPA argues that the phrase "relates to" evinces Congress' intention to permit a portion of a state's UIC program to fall under § 1425, provided that the activity controlled by that portion relates to "the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production or natural gas storage operations," or "any underground injection for the secondary or tertiary recovery of oil or natural gas." 65 Fed. Reg. at 2892 (quoting 42 U.S.C. § 300h-4(a)) (characterizing § 1425 as "an alternative demonstration for 'secondary or tertiary recovery'-related injection"). EPA concludes that the process of hydraulic fracturing, while not technically identical to secondary or tertiary recovery of natural gas, is analogous to, and therefore "relates to," secondary and tertiary recovery of gas. Accordingly, EPA asserts that hydraulic fracturing is covered by the alternate approval method set forth in SDWA § 1425.

LEAF, on the other hand, argues that the phrase "relates to" evinces Congress' intent to permit a portion of a state's UIC program to fall under § 1425 only if there is a direct relationship between "that portion" of a State's program and one of two specific activities: "the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production or natural gas storage operations," and

"underground injection for the secondary or tertiary recovery of oil or natural gas." *Id.* LEAF asserts that where Congress has been so specific in identifying the activities for which an alternate UIC program can be approved, it is inappropriate for EPA to assume that any other activities are included. Therefore, LEAF asserts that because the injection of hydraulic fracturing fluids to enhance the recovery of methane gas from coal beds is not one of the two specifically identified activities, it cannot qualify for approval under § 1425.[4] *Cf., United States v. Anderson*, 200 F.3d 1344, 1348 (11th Cir. 2000) (sentencing guideline provision which expressly applies to specified offenses should be construed to exclude application to other offenses).

Of the two interpretations of § 1425 offered by the parties, we find EPA's interpretation more compelling. By focusing only on whether hydraulic fracturing is the same as "secondary or tertiary recovery of oil or natural gas," LEAF's construction of § 1425 fails to give full weight to the phrase "relates to." Since "relates to" injects ambiguity and interpretative breadth into this statutory provision, we cannot accept LEAF's construction. We conclude, therefore, as a threshold matter that the statutory provision at issue, read in its entirety, *i.e.*, "that portion of any State underground injection control program which relates to . . . any underground injection for the secondary or tertiary recovery of oil or natural gas," does not "directly" and

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[4] Neither party argues that hydraulic fracturing is "the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production or natural gas storage operations . . . ." 42 U.S.C. § 300h-4. Additionally, neither party argues that hydraulic fracturing is identical to secondary and tertiary recovery. We therefore do not assume either of these propositions are true for purposes of this appeal.

"unambiguously" speak to whether a state's program regulating hydraulic fracturing may be approved under § 1425.

b. *Chevron* Step Two

According requisite deference to the EPA's interpretation of § 1425, we review EPA's conclusion that the process of hydraulic fracturing, while not technically identical to secondary or tertiary recovery of natural gas, is "analogous" to secondary and tertiary recovery and therefore covered by the alternate approval method set forth in SDWA § 1425. Under the second step of the *Chevron* analysis, the question we must answer "is whether the agency's answer is based on a permissible construction of the statute." *Chevron*, 467 U.S. at 843, 104 S. Ct. at 2782. We have little trouble concluding that EPA's decision to subject hydraulic fracturing to approval under § 1425 rests upon a permissible construction of the statute.

EPA bases its interpretation of § 1425 primarily on two grounds.[5] First, EPA asserts that hydraulic fracturing is a gas production enhancement process that is technically analogous to secondary and tertiary recovery techniques, and therefore covered by the alternate approval method set forth in § 1425.[6] EPA

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[5] In addition to the reasons discussed below, EPA relies on legislative history in construing § 1425 broadly. Since we conclude that the two reasons discussed below provide sufficient support for EPA's interpretation of § 1425, we need not examine the legislative history cited by EPA.

[6] The phrase "secondary or tertiary recovery of oil or natural gas" is not defined in the SDWA. The phrase is a technical phrase well-understood in the oil and gas industry. Where Congress has used

determined that both procedures generally enhance oil or gas production through the underground injection of fluids (gas or liquid) through an injection well to increase reservoir pressure and to drive oil or gas to a production well. *See* 65 Fed. Reg. at 2892. EPA further notes that one of LEAF's own exhibits confirms that hydraulic fracturing has traditionally been used to "aid in secondary recovery operations." *See* Information on Well-Stimulation Processes, U.S. Envt'l Protection Agency (1998 Draft), appearing at LEAF Comments, Exh.

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technical words or terms of art, it is appropriate to explain them by reference to the art or science to which they apply. *See, e.g., Corning Glass Works v. Brennan*, 417 U.S. 188, 201, 94 S. Ct. 2223, 2231 (1974); *United States v. Rodriguez*, 980 F.2d 1375, 1378 (11th Cir. 1992). Within the oil and gas industry, secondary recovery is understood as a technique that augments or replaces depleted natural reservoir pressure that would otherwise drive the oil or gas from the reservoir to the wellbore of the production well.

> The process has been described as follows:
>
> When oil production declines because of hydrocarbon production from the formation, the secondary oil recovery process is employed to increase the pressure required to drive the oil to the production wells. The mechanism of secondary oil recovery is similar to that of the primary oil recovery except that more than one wellbore is involved, and the pressure of the petroleum reservoir is augmented or maintained artificially to force oil to the production wells.

Enhanced Oil Recovery, II (Erle C. Donaldson, et al. eds., 1989) 3, appearing at LEAF Comments (Nov. 26, 1999), Exh. Z. Common secondary recovery techniques employed with oil reserves include waterflooding (or water injection) and gas injection. *See* Bill D. Berger & Kenneth E. Anderson, Modern Petroleum (3d ed. 1992) 236, appearing at LEAF Comments (Nov. 26, 1999), Exh. E. Common secondary recovery techniques employed with gas reservoirs include water injection and gas cycling. *See* Introduction to Oil and Gas Technology (Francis A. Guiliano ed., 3d ed. 1989) 137, appearing at LEAF Comments (Nov. 26, 1999), Exh. F.

C § 2.1. Second, EPA determined that a finding that hydraulic fracturing is not "related to" a state's UIC program governing methods to enhance oil and gas production would require states "to seek approval for similar parts of their oil- and gas-related UIC program under *both* section 1425 *and* 1422." 65 Fed. Reg. at 2892 (emphasis added). Such a result, EPA concluded, "would be both inefficient and inconsistent with Congress' expressed admonition that EPA not prescribe unnecessary requirements related to oil- and gas-related injection[.]" *Id.* (citing 42 U.S.C. § 300h(b)(2))."[7] We conclude these reasons are sufficient to support EPA's construction of the SDWA, and therefore hold that EPA's decision to subject hydraulic fracturing to § 1425 approval is based on a permissible construction of the statute.[8]

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[7] The SDWA provides that EPA may not establish requirements "which interfere with or impede . . . any underground injection for the secondary or tertiary recovery of oil or natural gas, unless such requirements are essential to assure that underground sources of drinking water will not be endangered by such injection." 42 U.S.C. § 300h(b)(2)(B).

[8] LEAF's argument to the contrary misses the mark. LEAF acknowledges that the purpose of the injection is the same, *i.e.*, the recovery of the gas. However, LEAF asserts that the means of achieving that purpose and the implications for contamination of underground sources of drinking water are different. Based on these differences, LEAF concludes that the injection of hydraulic fracturing fluids to enhance the recovery of methane gas from coal beds is not analogous to secondary or tertiary recovery of natural gas. We agree that certain distinctions exist between hydraulic fracturing and secondary and tertiary recovery, and that these distinctions would prevent EPA from treating hydraulic fracturing as identical to secondary and tertiary recovery of natural gas. We do not agree, however, that the distinctions necessarily foreclose EPA from concluding that the two activities are analogous or related activities.

B. EPA's Classification of Hydraulic Fracturing of Coal Beds to Produce Methane Gas as a "Class II-like underground injection activity"

1. Regulatory Framework

The original promulgation of UIC regulations in 1979 established a classification system for underground injection wells. Under this classification system, all underground injection wells subject to the SDWA fit within the five well classes in EPA's well-classification scheme. *See* 40 C.F.R. §§ 144.6 & 146.5; *see also LEAF I*, 118 F.3d at 1470.[9] Classes differ from each other according to the purpose and function of the well and the substance to be injected into it. We summarized the five categories in *LEAF I*:

> Class I wells are wells used to dispose of hazardous, industrial, or municipal wastes beneath underground sources of drinking water. 40 C.F.R. § 144.6(a). Class II wells are "[w]ells which inject fluids: (1) [w]hich are brought to the surface in connection with . . . conventional oil or natural gas production . . .; (2) [f]or enhanced recovery of oil or natural gas; and (3) [f]or storage of hydrocarbons." *Id.* § 144.6(b). Class III wells are wells which inject for extraction of minerals. Class IV wells are wells used to dispose of hazardous or radioactive wastes into or above underground sources of drinking water. *Id.* § 144.6(c) and (d). Class V wells are "[i]njection

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[9] EPA acknowledges that "[a]ll underground injection wells subject to the SDWA fit within the five well classes in EPA's well classification scheme." *See* Brief for Respondent at 27.

> wells not included in Classes I, II, III, or IV." *Id.* § 144.6(e).

Id.

After this Court determined that EPA must regulate hydraulic fracturing of coal bed seams as underground injection under the SDWA, EPA reviewed its well classification definitions to determine how to incorporate hydraulic fracturing into its existing regulations. *See* 65 Fed. Reg. at 2891-92. EPA noted, at the outset, that of the five well classes, hydraulic fracturing of coal beds to produce methane "appeared most closely related to Class II, especially that part of the Class II definition covering wells which inject fluids 'for enhanced recovery of oil or natural gas.'" *Id.* at 2892 (citation omitted). EPA further noted that "[i]t is certainly possible to view the emplacement of fracturing fluids through these methane production wells as designed to enhance the recovery of natural gas by creating fractures through which the methane might flow to the well and up to the surface." *Id.* Ultimately, however, EPA decided against classifying these wells as Class II wells. EPA explained:

> [S]ince the injection of fracture fluids through these wells is often a one-time exercise of extremely limited duration (fracture injections generally last no more than two hours) ancillary to the well's principal function of producing methane, it did not seem entirely appropriate to ascribe Class II status to such wells, for all regulatory purposes, merely due to the fact that, prior to commencing production, they had been fractured.

Id. Instead, EPA concluded that "it is reasonable to view hydraulic fracturing of these production wells as a Class II-like underground activity which, by itself, does not turn these methane production wells into Class II injection wells for purposes of complying with all of the Class II regulatory requirements in Parts 144 and 146." *Id.* Doing so, explained EPA, was "consistent with the Court's mandate that [it] treat hydraulic fracturing of coal beds for methane production as underground injection, while at the same time allowing Alabama the flexibility to fashion an approvable regulatory program addressing hydraulic fracturing which need not mirror all existing requirements in Parts 144 and 146 for Class II wells." *Id.*

2. Standard of Review

LEAF argues that EPA's classification of hydraulic fracturing of coal beds as a "Class II-like underground injection activity" is plainly erroneous and inconsistent with the language of 40 C.F.R. § 144.6. According to LEAF, wells used for hydraulic fracturing are Class II wells and should be regulated as such. In construing administrative regulations, we must give "controlling weight" to the agency interpretation "unless it is plainly erroneous or inconsistent with the regulation." *Bowles v. Seminole Rock & Sand Co.*, 325 U.S. 410, 414, 65 S. Ct. 1215, 1217 (1945); *see also Wright v. Director, Fed. Emergency Mgmt. Agency*, 913 F.2d 1566, 1571-72 (11th Cir. 1990). Thus, we will give effect to the agency's interpretation so long as it is "reasonable," *Ehlert v. United States*, 402 U.S. 99, 105, 91 S. Ct. 1319, 1323 (1971), that is, so long as the interpretation "sensibly conforms to the purpose and wording of the regulations." *N. Indiana Pub. Serv. Co. v. Porter County Chapter of Izaak Walton League of Am., Inc.*, 423 U.S. 12, 15, 96 S. Ct. 172, 174 (1975). We will afford

the agency interpretation such deference even if this interpretation is not "the best or most natural one by grammatical or other standards." *Pauley v. BethEnergy Mines, Inc.*, 501 U.S. 680, 702, 111 S. Ct. 2524, 2537 (1991) (citation omitted).

3. Classifying Hydraulic Fracturing of Coal Beds

An "injection well" is defined as "a 'well' into which 'fluids' are being injected." 40 C.F.R. § 144.3. As we noted in *LEAF I*, "[t]here is no dispute that methane gas production wells, which are initially used for hydraulic fracturing, are 'wells' within the meaning of the statute and regulations. Similarly, there is no dispute that the materials used in hydraulic fracturing are 'fluids' within the meaning of the statute and regulations." *LEAF I*, 118 F.3d at 1474 n.9. It follows that wells used for the injection of hydraulic fracturing fluids must fall into one of the five classes set forth in 40 C.F.R. § 144.6. *See LEAF I*, 118 F.3d at 1470 ("The state also must classify injection wells in conformance with the classification system promulgated by EPA in 40 C.F.R. § 144.6.").

In addition, LEAF argues that the plain language of the regulations demands that wells used for the injection hydraulic fracturing fluids be classified as Class II wells. LEAF notes that 40 C.F.R. § 144.6 classifies as Class II injection wells "wells which inject fluids . . . for enhanced recovery of oil and natural gas[,]" and EPA acknowledges that "[h]ydraulic fracturing of coal beds is a temporary and intermittent process in which *fluids* are *injected underground* at high pressures to create fractures in the coals seam that *enhance the recovery* of methane gas by creating pathways for the gas to flow to the surface." 65 Fed. Reg. at 2892 (emphasis added). LEAF thus

concludes that these wells cannot be classified as anything but Class II wells.

In considering LEAF's argument, we do not take lightly our obligation to defer to an agency's reasonable interpretation of its own regulations, particularly when, as here, the statute "has produced a complex and highly technical regulatory program." *Pauley*, 501 U.S. at 697, 111 S. Ct. at 2534. In this case, however, we cannot avoid the conclusion that EPA's construction of its classification scheme runs afoul of the plain language of the regulations and is therefore contrary to law. Where the classification system sets forth five classes, one of which serves as a catch-all for any well not covered by the first four, EPA must classify hydraulic fracturing into one of those categories. Moreover, as LEAF correctly notes, wells used for the injection of hydraulic fracturing fluids fit squarely within the definition of Class II wells. Accordingly, they must be regulated as such.[10]

EPA's arguments to the contrary are unpersuasive. First, EPA's focus on the duration of the underground injection is misplaced. The fact that hydraulic fracturing is of limited duration and ancillary to the principal function of the well does not exempt it from the well five-class well classification system.[11] Nor is the duration

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[10] At no point has EPA argued to this Court that wells used for the injection of hydraulic fracturing fluids could properly be categorized as Class V wells. We thus do not consider this possibility.

[11] In *LEAF I*, we recognized the limited duration of hydraulic fracturing and stated that EPA "may elect to subject methane gas to regulation . . . only during the process of hydraulic fracturing and not during gas production." 118 F.3d at 1475 n.11. EPA, however, chose not to do so, and instead elected to exempt the wells from certain Class II regulatory requirements by not properly classifying the wells

of the underground injection a factor addressed by the definition of Class II wells in 40 C.F.R. § 144.6. Second, EPA's argument that LEAF has failed to provide any evidence, either in the text or legislative history of the SDWA, that Congress intended to apply its well classification scheme rigidly turns traditional notions of statutory construction on their head. Where, as here, the plain language of the regulation does not permit the construction imposed on it by EPA, EPA cannot justify its interpretation by pointing to the absence of a statutory command to enforce the regulations rigidly. Nor can EPA salvage such an inconsistent interpretation by references to legislative history.[12]

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at all. Nothing in our opinion in *LEAF I* supports EPA's action in this regard.

[12] In addition to the arguments advanced above, EPA asserts that "full" Class II status for hydraulic fracturing would unnecessarily impede gas production in Alabama in contravention of 42 U.S.C. § 300(b)(2). EPA explains that, in Alabama, hydraulic fracturing of coal beds to enhance methane production occurs in the Pottsville aquifer, which qualifies as an underground source of drinking water (USDW). EPA argues that because Class II wells are prohibited from injecting in USDWs, the application of full Class II status to wells used to inject hydraulic fluids could stop or substantially delay coal bed methane gas production in Alabama.

LEAF challenges this argument as both an impermissible, *post hoc* rationalization, *see Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 50, 103 S. Ct. 2856, 2870 (1983), and incorrect as a matter of law. We need not determine whether this rationale is indeed *post hoc* because, even assuming it were not, this rationale does not defeat the plain language and structure of the regulations, which require that all injection wells be classified as Class I, II, III, IV, or V wells. Additionally we note that, as EPA recognizes, well operators may apply for an aquifer exemption, *see* 40 C.F.R. §§ 144.7, 146.3, which, if granted, would permit hydraulic fracturing of coal beds in the Pottsville Formation.

In sum, we conclude that EPA's decision to classify hydraulic fracturing of coal beds to produce methane as a "Class II-like underground injection activity" is inconsistent with the plain language of 40 C.F.R. § 144.6. Therefore, EPA's classification must be set aside. *See Mullins Coal Co., Inc. of Virginia v. Director*, 484 U.S. 135, 170, 108 S. Ct. 427, 445 (1987) (Marshall, J., dissenting) ("[D]eference has its bounds. It is not a license for an agency effectively to rewrite a regulation through interpretation. An agency must abide by its regulations as written until it rescinds or amends them."). Accordingly, we remand to EPA to determine whether Alabama's revised UIC program complies with the requirements for Class II wells.

C. Alabama's Revised UIC Program and the SDWA Requirements

Under the alternative method for program approval set forth in § 1425, a state must show that its UIC program meets the requirements of SDWA §§ 1421(b)(1)(A)-(D) and "represents an effective program (including adequate recordkeeping and reporting) to prevent underground injection which endangers drinking water sources." 42 U.S.C. § 300h-4(a). Accordingly, in order to receive approval for its Class II program under the optional demonstration, a state must make a successful showing that its program meets the following five conditions: (1) the program prohibits any underground injection in such State which is not authorized by permit or rule, *see* SDWA § 1421(b)(1)(A) (codified at 42 U.S.C. § 300h(b)(1)(A)); (2) the program requires that (i) the applicant for a permit "must satisfy the State that the underground injection will not endanger drinking water sources," and (ii) "no rule may be promulgated which authorizes any underground

injection which endangers drinking water sources[,]" *id.* § 1421(b)(1)(B) (codified at 42 U.S.C. § 300h(b)(1)(B)); (3) the program "include[s] inspection, monitoring, recordkeeping, and reporting requirements[,]" *id.* § 1421(b)(1)(C) (codified at 42 U.S.C. § 300h(b)(1)(C)); (4) the program applies to (i) "underground injections by Federal agencies, and (ii) to underground injections by any other person whether or not occurring on property owned or leased by the United States[,]" *id.* § 1421(b)(1)(D) (codified at 42 U.S.C. § 300h(b)(1)(D)); and (5) the program represents an "effective program . . . to prevent underground injection which endangers drinking water sources[,]" *id.* § 1425(a) (codified at 42 U.S.C. § 300h-4(a)).

LEAF contends that, even if EPA properly approved Alabama's revised UIC program under SDWA § 1425, EPA's conclusion that the program meets the statutory criteria in that section is arbitrary and capricious. In reviewing the reasonableness of an agency's decision-making process under the arbitrary and capricious standard of the Administrative Procedure Act (APA), *see* 5 U.S.C. § 706(2)(A), we are mindful that a party seeking to have a court declare an agency action to be arbitrary and capricious carries "a heavy burden indeed." *Transmission Access Policy Study Group v. FERC*, 225 F.3d 667, 714 (D.C. Cir. 2000). As a reviewing court, we "may not substitute [our] judgment for that of the agency and can set aside an agency's decision only if the agency relied on improper factors, failed to consider important relevant factors, or committed a clear error of judgment that lacks a rational connection between the facts found and the choice made." *Arango v. U.S. Dep't of the Treasury*, 115 F.3d 922, 928 (11th Cir. 1997) (internal quotation marks and citations omitted). Applying this deferential standard, we reject LEAF's argument that

EPA's rule arbitrarily determines that Alabama's UIC program complies with the statutory requirements.[13]

III. CONCLUSION

For the reasons discussed above, we DENY IN PART and GRANT IN PART the petition for review and REMAND for proceedings consistent with this opinion.

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[13] LEAF advances four arguments to support its contention. First, LEAF acknowledges that Alabama's revised UIC program provides for "written approval of the Supervisor," Ala. Admin. Code R. 400-4-5-.04(4), but argues that the "written approval of the Supervisor" is not the functional equivalent of a permit and therefore fails to meet the requirement of 42 U.S.C. § 300h(b)(1)(A). Second, LEAF agues that Alabama's revised UIC program fails to require that a permit applicant satisfy the state that underground injection will not endanger underground sources of drinking water, as required by 42 U.S.C. § 300h(b)(1)(B). Third, LEAF argues that Alabama's revised UIC program does not apply to all persons, as required by 42 U.S.C. § 300h(b)(1)(D). Fourth, LEAF argues that Alabama's revised UIC control program does not represent an effective program to prevent underground injection which endangers drinking water sources, as required by 42 U.S.C. § 300h-4(a)(2). We have carefully considered each argument and conclude that none of these arguments would support setting aside the agency's determination in this case.

APPENDIX B

IN THE UNITED STATES COURT OF APPEALS

FILED
U.S. COURT OF APPEALS
ELEVENTH CIRCUIT
MAR 18, 2002
THOMAS H. KAHN
CLERK

FOR THE ELEVENTH CIRCUIT

No. 00-10381-DD

LEGAL ENVIRONMENTAL ASSISTANCE FOUNDATION, INC.,

Petitioner,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

Petition for Review of a Final Order of the Environmental Protection Agency

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ON PETITION(S) FOR REHEARING AND PETITION(S) FOR REHEARING EN BANC

(Opinion _____, 11th Cir., 19___, _____F.2d _____).

Before: BLACK and MARCUS, Circuit Judges, and HANCOCK*, District Judge

PER CURIAM:

The Petition(s) for Rehearing are DENIED and no member of this panel nor other Judge in regular active service on the Court, having requested that the Court be polled on rehearing en banc (Rule 35, Federal Rules of Appellate Procedure; Eleventh Circuit Rule 35-5), the Petition(s) for Rehearing En Banc are DENIED.

ENTERED FOR THE COURT:

s/ Susan H. Black
UNITED STATES CIRCUIT JUDGE

ORD-42
(6/95)

*Honorable James H. Hancock, U.S. District Judge for the Northern District of Alabama, sitting by designation.

APPENDIX C

SAFE DRINKING WATER ACT

42 U.S.C. § 300h. - Regulations for State programs

(a) Publication of proposed regulations; promulgation; amendments; public hearings; administrative consultations

(1) The Administrator shall publish proposed regulations for State underground injection control programs within 180 days after December 16, 1974. Within 180 days after publication of such proposed regulations, he shall promulgate such regulations with such modifications as he deems appropriate. Any regulation under this subsection may be amended from time to time.

(2) Any regulation under this section shall be proposed and promulgated in accordance with section 553 of title 5 (relating to rulemaking), except that the Administrator shall provide opportunity for public hearing prior to promulgation of such regulations. In proposing and promulgating regulations under this section the Administrator shall consult with the Secretary, the National Drinking Water Advisory Council, and other appropriate Federal entities and with interested State entities.

(b) Minimum requirements; restrictions

(1) Regulations under subsection (a) of this section for State underground injection programs shall contain minimum requirements for effective programs to prevent underground injection which endangers drinking water sources within the meaning of subsection (d)(2) of this section. Such regulations shall require that a State program, in order to be approved under section 300h-1 of this title -

(A) shall prohibit, effective on the date on which the applicable underground injection control program takes effect, any underground injection in such State which is not authorized by a permit issued by the State (except that the regulations may permit a State to authorize underground injection by rule);

(B) shall require

(i) in the case of a program which provides for authorization of underground injection by permit, that the applicant for the permit to inject must satisfy the State that the underground injection will not endanger drinking water sources, and

(ii) in the case of a program which provides for such an authorization by rule, that no rule may be promulgated which authorizes any underground injection which endangers drinking water sources;

(C) shall include inspection, monitoring, recordkeeping, and reporting requirements; and

(D) shall apply

(i) as prescribed by section 300j-6(b) agencies, and

(ii) to underground injections by any other person whether or not occurring on property owned or leased by the United States.

(2) Regulations of the Administrator under this section for State underground injection control programs may not prescribe requirements which interfere with or impede -

(A) the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production or natural gas storage operations, or

(B) any underground injection for the secondary or tertiary recovery of oil or natural gas, unless such requirements are essential to assure that underground sources of drinking water will not be endangered by such injection.

(3) (A) The regulations of the Administrator under this section shall permit or provide for consideration of varying geologic, hydrological, or historical conditions in different States and in different areas within a State.

(B) (i) In prescribing regulations under this section the Administrator shall, to the extent feasible, avoid promulgation of requirements which would unnecessarily disrupt State underground injection control programs which are in effect and being enforced in a substantial number of States.

(ii) For the purpose of this subparagraph, a regulation prescribed by the Administrator under this section shall be deemed to disrupt a State underground injection control program only if it would be infeasible to comply with both such regulation and the State underground injection control program.

(iii) For the purpose of this subparagraph, a regulation prescribed by the Administrator under this section shall be deemed unnecessary only if, without such regulation, underground sources of drinking water will not be endangered by an underground injection.

(C) Nothing in this section shall be construed to alter or affect the duty to assure that underground sources of drinking water will not be endangered by any underground injection.

(c) Temporary permits; notice and hearing

(1) The Administrator may, upon application of the Governor of a State which authorizes underground injection by means of permits, authorize such State to issue (without regard to subsection (b)(1)(B)(i) of this section) temporary permits for underground injection which may be effective until the, expiration of four years after December 16, 1974, if -

(A) the Administrator finds that the State has demonstrated that it is unable and could not reasonably

have been able to process all permit applications within the time available;

(B) the Administrator determines the adverse effect on the environment of such temporary permits is not unwarranted;

(C) such temporary permits will be issued only with respect to injection wells in operation on the date on which such State's permit program approved under this part first takes effect and for which there was inadequate time to process its permit application; and

(D) the Administrator determines the temporary permits require the use of adequate safeguards established by rules adopted by him.

(2) The Administrator may, upon application of the Governor of a State which authorizes underground injection by means of permits, authorize such State to issue (without regard to subsection (b)(1)(B)(i) of this section), but after reasonable notice and hearing, one or more temporary permits each of which is applicable to a particular injection well and to the underground injection of a particular fluid and which may be effective until the expiration of four years after December 16, 1974, if the State finds, on the record of such hearing -

(A) that technology (or other means) to permit safe injection of the fluid in accordance with the applicable underground injection control program is not generally available (taking costs into consideration);

(B) that injection of the fluid would be less harmful to health than the use of other available means of disposing of waste or producing the desired product; and

(C) that available technology or other means have been employed (and will be employed) to reduce the volume and toxicity of the fluid and to minimize the potentially adverse effect of the injection on the public health.

(d) "Underground injection" defined; underground injection endangerment of drinking water sources
For purposes of this part:

(1) The term "underground injection" means the subsurface emplacement of fluids by well injection. Such term does not include the underground injection of natural gas for purposes of storage.

(2) Underground injection endangers drinking water sources if such injection may result in the presence in underground water which supplies or can reasonably be expected to supply any public water system of any contaminant, and if the presence of such contaminant may result in such system's not complying with any national primary drinking water regulation or may otherwise adversely affect the health of persons.

42 U.S.C. § 300h-4. - Optional demonstration by States relating to oil or natural gas

(a) Approval of State underground injection control program; alternative showing of effectiveness of program by State
For purposes of the Administrator's approval or disapproval under section 300h-1 of this title of that portion of any State underground injection control program which relates to -

(1) the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production or natural gas storage operations, or

(2) any underground injection for the secondary or tertiary recovery of oil or natural gas, in lieu of the showing required under subparagraph (A) of section 300h-1(b)(1) of this title the State may demonstrate that such portion of the State program meets the requirements of subparagraphs (A) through (D) of section 300h(b)(1) of this title and represents an effective

program (including adequate recordkeeping and reporting) to prevent underground injection which endangers drinking water sources.

(b) Revision or amendment of requirements of regulation; showing of effectiveness of program by State

If the Administrator revises or amends any requirement of a regulation under section 300h of this title relating to any aspect of the underground injection referred to in subsection (a) of this section, in the case of that portion of a State underground injection control program for which the demonstration referred to in subsection (a) of this section has been made, in lieu of the showing required under section 300h-1(b)(1)(B) of this title the State may demonstrate that, with respect to that aspect of such underground injection, the State program meets the requirements of subparagraphs (A) through (D) of section 300h(b)(1) of this title and represents an effective program (including adequate recordkeeping and reporting) to prevent underground injection which endangers drinking water sources.

(c) Primary enforcement responsibility of State; voiding by Administrator under duly promulgated rule

(1) Section 300h-1(b)(3) of this title shall not apply to that portion of any State underground injection control program approved by the Administrator pursuant to a demonstration under subsection (a) of this section (and under subsection (b) of this section where applicable).

(2) If pursuant to such a demonstration, the Administrator approves such portion of the State program, the State shall have primary enforcement responsibility with respect to that portion until such time as the Administrator determines, by rule, that such demonstration is no longer valid. Following such a determination, the Administrator may exercise the authority of subsection (c) of section 300h-1 of this title in

the same manner as provided in such subsection with respect to a determination described in such subsection.

(3) Before promulgating any rule under paragraph (2), the Administrator shall provide opportunity for public hearing respecting such rule.